Engaging students in creative learning tasks with social networks and video-based learning

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***Abstract*—Video-based learning is a widely used approach for teaching. This paper investigates how this approach could be improved with other well known methodology: computer supported collaborative learning (CSCL). The integration of both approaches results in a creative and engaging educational activity, collaborative film-making. This task is supported by a platform developed as a social network. During the design of the platform, opinions of teachers and students were taken into account. Both, teachers and students, agreed that this approach helps students to understand threshold concepts. In addition, students identified useful facilities in the platform like group-private workspaces or commenting tools. Students' satisfaction was high, in fact they recommend the use of this approach in more subjects.**

Keywords—Social Networks; Video-based Learning; Creative learning; STEM;

1. INTRODUCTION

Students often encounter barriers to their understanding of complex concepts regarding to STEM subjects. The comprehension of these concepts, called threshold concepts (TC) [1], opens students' mind allowing them to understand and establish connections with other concepts. Usually, TCs are abstract and students have difficulty seeing its relation to real world. In this sense, it is required to provide methodologies and tools for supporting the teaching-learning process of these TCs.

New innovative practices in Engineering Education include the use of social networks or video-based learning environments. Social networks facilitate engaging teenagers and young people based on socio-cultural learning theories. Video-based environments provoke the students' curiosity and increase their motivation. However, platforms that combine both new methodologies have not been found. This paper presents an innovative educational platform based on a social network approach that supports creative learning activities, especially video-making.

Three dimensions describe the aim of the platform: transmit, collaborate and receive information. Transmit dimension stands for student's actions that have some impact on their peers, i.e. inform, educate, inspire, build peers' capacity or involve them in activities. The platform supports this with video and file sharing together with a commenting facility. Collaborative dimension stands for what students do together, i.e. consider, create or decide something. Finally, receive dimension stands for the effect of peers' actions on a student, i.e. build one's own capacity or knowledge. This dimension is supported by viewing videos, files, comments and ratings. The development of the platform has counted on both, teachers' and students' perspective.

Both, teachers and students, will be taken into account during the design of the learning platform. On the one hand, teachers have an important role because they are the facilitators of the learning process previously proposed. Thus, the deployment of our approach will be supported by them. In addition, they are significantly involved in many steps of the learning process: providing interpretations, identifying key concepts, facilitating discussions and evaluating students' results. On the other hand, students are end users of the platform and obviously will form part of the design process.

The rest of the paper is organized as follows. Section 2 describes the related work. Section III details teachers' recommendations for the platform and section IV describes the platform. Section V

explains the empirical evaluation of the approach and the platform. In section VI we discuss the results of both studies. Finally, in section VII we draw our conclusions.

2. Related Work: videos, computer supported collaborative learning and social networks

Videos have been used as teaching resources during years. An early example is "Duck And Cover" (1951) an US civil defense film that shows what to do in case of a nuclear attack (https://www.youtube.com/watch?v=IKqXu-5jw60). Nowadays, people search information in multiple formats and one of the most popular is video. In this sense, video-based learning platforms have arisen during the last years, e.g. Youtube Education or Khan Academy, among others. This work does not consider students as passive viewers. We will use a more active approach [2] such as video making. Formerly, video making was a costly activity but current technologies make easier this task.

There are several pedagogical theories such as sociocultural theory or constructivism theory related to active learning and to video based learning. Sociocultural theory [3] is based on the fact the human intelligence emerges our society or culture, and that individual cognitive gain mainly happens through the interaction with the social environment. Knowledge is constructed, discovered and transformed into concepts, which students can relate [4]. Learning consists of active participation versus passive acceptance of information presented by an expert lecturer. Students are actively constructing their own individual knowledge, and learn how to understand and appreciate different perspectives through a dialogue with their peers. Video making in our approach is a group activity therefore it can gather all the advantages of this theory. Constructivism theory [5] manifests that knowledge is not a fixed object but an object changing. Knowledge is constructed by the individual through his own experience of that object. Students have to assume the responsibilities related to their own learning. They have to develop abilities to guide their own learning and performance. When people work collaboratively in an activity, they can see a problem from different perspectives and are able to negotiate, to generate meanings and solutions through shared understanding.

In both pedagogical theories, students collaborate with others to encourage the active learning (our video based learning approach is grounded on it) and the interaction between peers. Real world is the origin of collaboration activities since everybody is member of at least one group. In our daily activity we are continuously interacting inside groups: in the family life, with our friends, in our work, etc. Our identity stems from the way of perceiving and of treating with other members. Within the group we learn to behave, to think, to educate ourselves and to learn from our interaction with the rest of the members [6]. Real world is too the key to find objects or methods related to threshold concepts.

There are several research works performed at different fields that evidence the goodness and the limits of active learning. In [7], it is found that there is broad but uneven support for the core elements of active, collaborative, cooperative and problem-based learning. This paper also shows that a unique technique is inadequate to achieve a better learning. Felder et al. [8] give some instructional methods to support these new paradigms.

Face-to-face collaborative learning has been applied in traditional classrooms since the 70s, although most of theoretical studies related with it date back of the 80s [9]. These experiences pointed out that the learning process includes the explanations that are provided in order to identify which information is missed, the inconsistencies that are detected and, what needs to be clarified or is discussed from different points of view by different members of the group [3]. By making storyboards and video drafts students are engaged in a similar way.

In this one sense, collaborative learning is a social activity that involves a students' community in which some knowledge is shared and other new one is acquired (knowledge construction) [5] [10]. Therefore the goal of collaborative learning is that the students were actively involved in the exploratory learning process working together [11]. Social network facilitates this proccess sharing information and receiving feedback.

Collaboration has great benefits such as to promote the cooperation, the interaction and the familiarity among students and teachers. Moreover, from the computer scientists' point of view, collaborative environments facilitate the development of reasoning skills [12] such as making ideas explicit, arguing, interacting with other students to build a common solution, and so on [13]. There are some experiences that demonstrate that the student's motivation, participation and auto esteem increase when they obtain good results in the accomplished collaborative activities.

Thus, we focus on collaborative creation of videos. Tibbs [14] reported a successful experience in which learners made and shared videos improving the learning process, and reinforcing knowledge and interest in the topic. In this framework, we want to investigate the best technological support for this activity. In our opinion functionalities provided by social networks are good candidates.

A natural extension of the collaborative work tools are social networks. The use of social networks in educational settings is not based on arbitrary application of a technological innovation. Some features drawn from the experiences of its use are [15] [16] [17]:

- Students, mainly from school, use social networks often. They could be considered as expert users who do not need to learn how to use the system interface and are able to use all the possibilities provided by this technology.
- Facilitate the involvement of students in educational activities such as discussions, outside the classroom.
- Increase flexibility in the interaction of students with the educational context.

The use of social media as educational tools has followed two approaches. On the one hand, there are some works that take advantage of existing social networks, but with mixed results. In some cases students have a positive attitude towards the use of social networks [18], however in other cases students use the social networks as forums where they discuss issues that have nothing to do with the topic in the course [19]. On the other hand social networks have been used with educational purposes both developed by others [15] and by the researchers themselves [19]. Although there are no clear results from these different uses of social networks, it seems that user's satisfaction is good and their involvement in educational tasks is greater. On the contrary, there is a risk that students use these tools with other aims outside the academic scope.

There are previous experiences supporting our main idea: collaborative video creation as a learning task. We will investigate how this approach could be deployed and supported by CSCL and a social approach. First, we will study these possibilities from the teachers' point of view. The results of the study will guide the design of the platform. Finally, this platform will be empirically evaluated from the student's point of view. Let's look at each step in detail.

3. THE TEACHERS' PERSPECTIVE

Teachers will provide the expert's view regarding the appropriate educational use of videos. The functionalities provided by the platform should follow teachers' recommendations.

Participants were 15 teachers from two different secondary schools with high reputation. All of them taught STEM subjects, namely, biology, geology, physics, chemistry, mathematics and computer science. Four participants taught in the first and second courses (age range [12-13]). The rest of them taught in third and fourth courses (age range [14-15]).

A questionnaire was designed to be answered at the teachers' schools. It was anonymous and consisted of 9 questions. Next we details the results.

A. Results obtained from the teachers' questionnaire

Firstly, we asked teachers about their courses, subjects, number of students and background. This data provided us with contextual information. The rest of the questions (4 to 9) addressed the educational use of videos. Thus, the fourth question was related to visibility (scope) of videos. Six teachers (40%) said that the scope should be restricted to class. Seven (46.6%) thought that it should be restricted to school. And only two of them (14.4%) said that the scope should not be restricted, i.e., must be absolutely public.

The fifth question was quantitative. Teachers must rate different educational activities with videos (see TABLE I.) using a range [0-10] where 0 means "irrelevant" and 10 means "essential". Results can be seen in Fig. 1. The best rated option was 'create videos collaboratively, allowing suggestions from group members' (activity number 14) with average of 8.2. The second was 'seeing and modifying videos (to add comments, graphics, etc in the video)' (number 5) with 7.7. The third was 'seeing videos and answering questions related with the concept' (number 12) with 7.6.

The lowest rated options were 'seeing videos and showing playlist related with same author' (number 10) with 5.2 and 'only seeing video' (number 1) with 5.3. Thus we may infer that teachers stress collaborative aspect as sharing videos with mates or creating videos within a group work. Also they would be able to look for advanced uses of the videos: add subtitles, modify once edited and integrate videos in wikis or blogs. Lastly also feel attracted by the idea that the students have to answer questions on the concept involved in video.

The sixth question deals with video-based learning. All the teachers said that video is a good tool for teaching but it needs additional support, i.e. the video may not be the unique tool to transmit concepts.

With the seventh question we tried to find out which collaborative and communicative tasks were most important. Teachers' opinion was: 'Create workspaces for students of the same group may reflect, propose and discuss the best alternatives for a given task' and 'enable students to include comments on the videos' are essential tasks. Also the following tasks are required: 'Allow communication between students by

TABLE I. RATED ACTIVITIES

Activity Number	Activity title
1	Only seeing video
2	Seeing and commenting video
3	Seeing and rating videos
4	Seeing videos and adding subtitles (if speaking in other language)
5	Seeing and modifying videos (to add comments, graphics, etc. into video)
6	Seeing and sharing videos
7	Seeing videos and showing playlist related with same concept
8	Seeing videos and showing playlist related with similar concept
9	Seeing videos and showing playlist related with same subject
10	Seeing videos and showing playlist related with same author
11	Seeing videos and showing playlist related with concept application
12	Seeing videos and answering questions related with the concept
13	Integrating the videos over in other platforms such like Wikis or Blogs
14	Create videos collaboratively, allowing suggestions from group members
15	Others

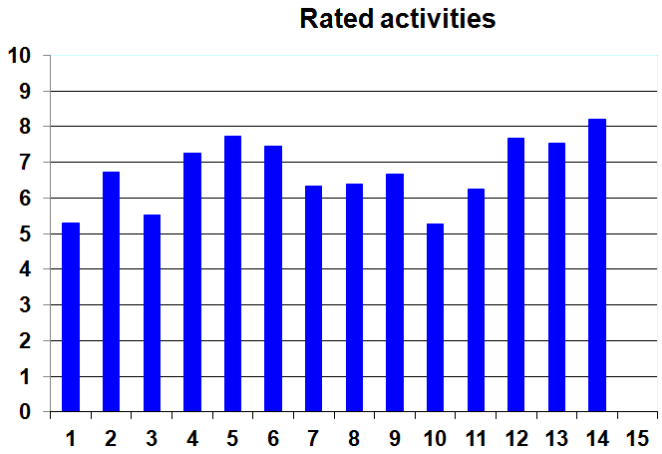

Fig. 1. Average rate of each activity. X axis corresponds to Activity numbers from TABLE I.

using short messages via the platform (Twitter style)' and 'Automatically report the latest news related to the content created by a person either student or teacher'

The eighth question was about usefulness of an educational platform based on a social network approach that supports creative learning activities, especially video-making. Teachers thought that it was really useful, its rate was 7.9.

The last question served us to know about the infrastructure of schools. Teachers believed that secondary schools have adequate computers to use a platform based on internet.

We can conclude that the platform should support collaborative tasks, as video making, but facilitating discussions among the students together with sharing materials.

4. THE EDUCATIONAL AND SOCIAL PLATFORM TO SUPPORT VIDEO BASED LEARNING.

As stated before, the teachers' perspective guided the design and development of the platform. Of course, students could use the platform to play videos published in it. But from the active learning approach, the platform will also facilitate collaborative work when students create the videos. Moreover, it will have to facilitate sharing, commenting and rating of videos. These are typical functionalities from social networks.

Thus the platform could be defined as an educational social network which has the goal to promote learning of thresholds concepts [1] through the collaborative creation of videos. Thus, we have used Elgg (http://elgg.org/) an environment that allows the deployment of social networks. Elgg is composed of several plug-ins. This makes it highly configurable, both in appearance and in functionality.

The platform allows teachers to present an activity, in which the students work, producing a video about a concrete topic. Teachers also can create a workspace for students they can reflect, propose and discuss the best alternatives for a given task. The final learning product is the video created by students. However, the platform promotes the reflective learning thanks to collaborative work where students can share different educational materials and discuss about them in this educational social network.

The platform provides standard tools such as message boards, file upload, private messaging among users, blog, content search, tag cloud, photo gallery and chat. Thanks to comments, students can provide and receive suggestions to their peers in order to improve the learning material. The same material can be improved according to the issues detected by classmates. This methodology follows a constructivism approach based on partners' discussions.

In addition, we extended the features of the platform with the following tools. The Groups tool allows student groups management. Each group has access to several private spaces for: files, videos, photos, images and discussion forums. The embedded videos tool allows the inclusion of video files embedded within contents posted by users of the community in different sections of the platform. The voting system allows students to rate the content posted by others using both: a five values scale

and the "like" button. Thus, each element could be associated with an average score that would qualify it. The event calendar can be accessed by all the users, but it also allows the creation of custom calendars for each group. The wallnote is a micro-blogging system that allows the students communicate with the rest of the community using short text message, like Twitter. Twitter and Facebook connect, allow students to access the platform using their identification via Twitter or Facebook. Finally, the bookmark tool allows students and groups to identify interesting sites and share them with the community.

In Fig. 2 we can see an example of the landing page for a specific user. It enhances the last news in the timeline of the educational activity, workgroups, friends, events and the videos uploaded to the platform. Teachers can configure the elements to be displayed in this page according to their learning goals.

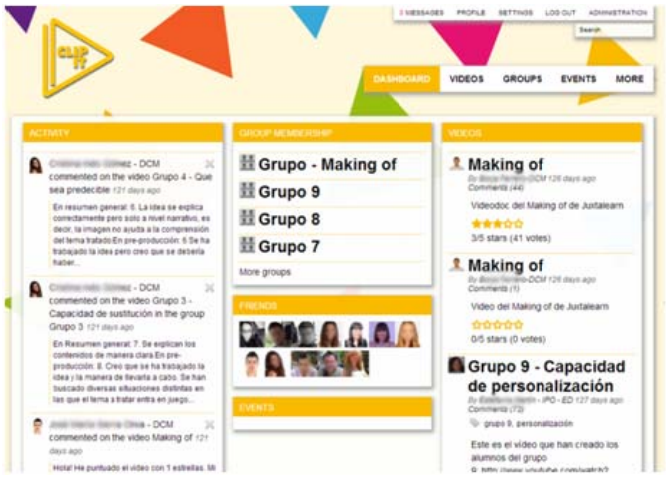

Fig. 2. Dashboard of ClipIt

5. THE STUDENTS' PERSPECTIVE

We have used the teachers' perspective to develop the first version of the platform. We have conducted an empirical evaluation from the students' perspective. The evaluation consisted of two phases: video production and discussion. At this point we were interested in students' engagement. Therefore, we focused on measuring students' satisfaction. Thus, with this evaluation we have identified strengths and weakness of the educational approach and the platform itself.

A. Participants, groups and topics

Twenty eight students (26 male and 2 female) participated in this evaluation. They were enrolled in an object oriented programming course. This course is taught in the second year of a four years CS degree. Students' participation was incentive based because they got an extra credit if they complete all the tasks related to the study. During the video production phase, students worked in groups of, at most, three members. Thirteen groups were created by students themselves.

The threshold concept of videos was inheritance, a key concept in object oriented programming. Actually, it was divided into five topics. Each group was assigned to one topic: (1) inheritance - focusing on specialization, (2) inheritance - focusing on generalization, (3) Different uses of inheritance, (4) Abstract classes and (5) Interfaces in Java.

B. Method and protocol

Participants were enrolled in this study during 19 days. The first day, we explained to the students the tasks to be completed. Then students read a detailed description of the tasks and asked the doubts they had. Finally, each group received its topic assignment. The following 14 days, the video production phase, were dedicated to design the script and produce the video. In order to emphasize creativity, we imposed a clear restriction for the contents of the video: it could not have any code (programming instructions) or graphics related with Java. Students should seek analogies in the real world. Once the videos were published in the platform, the next 3 days were dedicated to the discussion phase. The last day was dedicated to complete a questionnaire and participate in a focus group session. TABLE II. summarizes this protocol.

TABLE II. PROTOCOL OF THE EVALUATION

Day	Protocol description	
	Phase	***Task***
1st	Introduction	Description of the experiment Topic assignment
2nd	Video production	Script design
…		Video development
15th		Video publication
18th	Discussion	Video commenting and grading
19th	Data collection	Questionnaire & Focus group

Apart from the introduction and data collection phases, students had to complete 4 tasks divided in two phases. The first phase, video production, required from students to work in groups to complete 3 tasks: script design, video development and video publication. The platform supported these tasks with group facilities, e.g. private group discussions and file sharing.

During script design, group members had to decide how to explain the topic with everyday concepts and objects. What would be the main actors of the video and what would be the story. Finally, they should anticipate the technique to use in the video, e.g. stop-motion, cutout animation, ASCII art, morphing, etc. The video development task required from students to decide the actual look of actors (e.g. images), their context (e.g. backgrounds), and produce the movie. The maximum duration of videos was 5 minutes, and they should be subtitled. The first day, instructors provided a list with useful tools for video production. Once the video had been developed, group members worked on fixing errors and low level details. Finally, the video was published in the platform so the rest of participants could play it.

The second phase, discussion, required from students to get out the groups working independently from the other members of her/his group. Each student had to provide at least one comment per video published in the platform. In addition, they had to grade the videos using one the grading features provided by the platform: five stars scale or like buttons. Students could answer to the comments associated to their videos. Thus, some debates appeared during this phase.

The dependent variables of the evaluation were: usefulness of the functionalities provided by the platform, and students' opinion about the platform and the learning experience. Data were collected using a questionnaire and a focus group session. The questionnaire consisted on 34 questions. Most of them had to be answered using a five values Likert scale. A first group of questions asked students about the usefulness of the different functionalities provided by the platform. A second group of questions asked students about their opinion regarding the platform, from a general point of view (e.g. is this platform easy to learn for a novel user?), and the learning experience (e.g. was it a funny? does it motivate the study of the subject?). The questionnaire finished with some open questions where students could provide any information (positive or negative) not covered by previous questions that they felt to be important.

Once the questionnaire was completed, we conducted a focus group session. We asked students about the questionnaire because some answers were unexpected and some pointed interesting proposals. We will describe these details in the subsections 5.C and 5.D.

C. Results obtainned from the questionnaire

With the questionnaire, we have collected data regarding: the usefulness of functionalities offered in the platform, students' opinion about the platform and students' opinion about the learning experience. TABLE III. shows students' answers about functionalities usefulness in terms of percentage of answers in range [4-5], i.e. the functionality is quite useful or even essential, and range [1-2], i.e. the functionality is quite or absolutely useless. It can be seen that commenting on articles and group-private discussion forums are the best valued functionalities. Other functionalities (questions 5, 10, 2, 6 and 15) have also been well rated (%[4-5] > 60%). The rest of functionalities have been low rated (%[4-5] < 60%). These functionalities were discussed during the focus group session.

TABLE IV. shows that students' opinion about the platform is quite positive, all questions have more than 60% of answers in the range [4-5]. Thus, from a usability point of view, the platform has been well rated for memorability, user's satisfaction, ease of use and learnability [21].

TABLE III. QUESTIONNAIRE ANSWERS REGARDING USEFULNESS LISTED IN DESCENDING ORDER

Questions regarding usefulness	**% of answers in range**	
	[4-5]	***[1-2]***
4. Commenting on published articles	89,29%	3,57%
8. Group-private discussion forum	85,71%	0,00%
5. Grading videos with the 5-stars scale	78,57%	7,14%
10. View the activity of the whole group	78,57%	0,00%
2. Tab to see all the uploaded files	71,43%	17,86%
6. Tab calendar with important events	67,86%	10,71%
15. Commenting on pages created in the platform	67,86%	0,00%
16. Grading pages with the 5-stars scale	57,14%	7,14%
1. Tab to see the contributions log	46,43%	14,29%
12. Bookmarks	46,43%	17,86%
3. Tags associated with content uploaded to the platform	42,86%	25,00%
9. Tags associated with discussions topics of private forum	42,86%	25,00%
18. Notes wall (short messages similar to Twitter)	42,86%	21,43%
11. On-line chat	39,29%	25,00%
17 Rating page contents with "Like" buttons	39,29%	25,00%
13. Creation of new pages	32,14%	7,14%
7. Tab to upload photos and images	21,43%	17,86%
14. Tags associated to pages	21,43%	35,71%

TABLE IV. QUESTIONNAIRE ANSWERS REGARDING STUDENTS' OPINION ABOUT THE PLATFORM

Questions regarding students' opinion about the platform	% of answers in range	
	%[4-5]	*%[1-2]*
21. I easily remember how to use the platform	71,43%	14,29%
25. In general, I am satisfied with the platform	67,86%	14,29%
19. The platform seems to be easy to use	64,29%	21,43%
20. I have learned to use the platform quickly	64,29%	21,43%
22. I found the platform useful in learning subjects related to my degree	60,71%	14,29%

TABLE V. shows that students have a positive opinion about this activity. They think that the learning experience is funny and motivates the students to work on the subjects associated to the activity. Finally, students' opinion about the effort dedicated to produce the videos is not clear. In our opinion students think that the effort was not huge, but it could be less.

We also asked students if they would recommend to use this activity with other subjects. The 82.24% t thought that they would recommend the activity. Measured in terms of percentage of students that cited a subject, the most cited subjects were *Algorithm design and analysis*, and *Data structures* (66.67%). Next are *Introductory programming* (61.9%), *Declarative programming* (57.14%), Concurrent, P*arallel* and O*bject oriented programming* (52.38:%) and *Fundamentals of software design* (47.62%). Less cited subjects were *Human-computer interaction* (38,1.%), *Discrete maths*, *Networks*, *Computers structure*, *Competes organization and architecture*, and *Software engineering* (33.3%), and *Web applications design*, *Multimedia*, *Operating systems*, *Distributed systems*, *Task time an embedded systems*, and *Information Systems* (28.57%). From a more general point of view, different types of subjects were mentioned by students: online courses, subjects related to programming or mathematics, subjects with a significant amount of abstract contents.

At the end of the questionnaire we have used three open questions to ask students about positive, negative and other comments not covered by previous questions. We have analyzed students' answers to these questions in terms of percentage of students that have mentioned a concrete aspect or idea. Twenty students made positive comments, most of them regarding the learning experience. The most frequently mentioned comment (35%, 7/20) highlights that this activity is an alternative way of learning. Other positive aspects are the team work approach used in the activity, and the reflection effort where students are engaged during the video creation (both 25%, 5/20). Finally, some students (15%, 3/20) highlight that this activity fosters students' creativity. Thirteen students made negative comments. The most frequent comment (38.46%, 5/13) deals with the platform slowness (caused by the hosting service). Other students identified problems finding videos uploaded in the platform, as a consequence this affected to the ease of use of the platform (23.08%, 3/13). Finally, 14 students made other general comments. Most frequent ones were: to widen the application of this activity and increase the time available to produce the videos (both 21.43%, 3/14).

TABLE V. QUESTIONNAIRE ANSWERS REGARDING STUDENTS' OPINION ABOUT THE LEARNING EXPERIENCE

Questions regarding students' opinion about the learning experience	% of answers in range	
	%[4-5]	*%[1-2]*
23. I have enjoyed during this activity	82,14%	3,57%
24. This activitie motivates me to study the subject	64,29%	10,71%
26. Making videos has taken too much effort	17,86%	35,71%

D. Results obtainned from the focus group

As stated before, the focus group served us for clarify unexpected results from the questionnaire, e.g. platform features (see TABLE III.) with usefulness rated under 50% of answers in the range [4-5].

Tags (questions 3, 9 and 14) received a low rate because they were not used. Students said that tags were easy to use, but the number of videos was not big enough to require their use. Therefore, in the framework of activities with an enough number of videos, students said that they would use tags. In addition, they think that it would be useful to share the tags among the students so a common group of tags would be used, making easier their use. When asked about collaborative tagging, students said that only the authors should assign tags to their videos and contents.

Surprisingly, the possibility to rate videos with "Like" buttons (question 17) was lowly rated. Students confirmed that they think that this option was absolutely useless. They prefer the five-stars scale (question 16) because they think that it is a more objective measurement. But they said that it would be better to have a rubric with specific criteria to rate the videos in a more objective way.

Bookmarks (question 12) and photo/image tab (question 7) again were low rated because students did not used them. When asked about them, students said that these features could be useful.

The chat (question 11) and the wall notes (question 18) were low rated because none used them. Furthermore, students said that they would not use them.

Students' opinion regarding their effort dedicated to the video production (question 26) was not clear, 46.43% of answers were "no opinion". Students said that standard tools for video editing are quite simple. They said that most of the effort was dedicated to create the script. Students said that first they needed a deep understanding of the concept, then get the main idea and finally create the video. In summary "edit the video is a minor question, the big problem is to get the idea and create the script".

Students also provided information about other aspects. We have classified this information depending on the phase of activity: creating, playing or discussing about videos. Regarding the video creation, students said that due to the limited length, they focused on provide a general view of the concept rather than low level details of it. They also realized that creating the video requires a deep understanding of the concept, therefore it is better learnt. Finally, students did not know how to include subtitles within their videos, but it was a simple task.

When playing educational videos, students prefer videos that accomplish the following criteria: they should be entertaining, short (maximum of two minutes) and with audio contents. In addition, students usually search for short videos (mostly in YouTube) that help them understanding the concepts that they are studding. Short videos allow students to easily replay them if needed. Finally, students said that it would be useful to have videos where other students explain the concepts, like a "pair to pair" explanation.

Regarding the discussions about videos, students said that it would be interesting that videos were anonymous, but not the comments. In fact, they said that probably they would pay more attention to comments from their fellows. If they did not know the comment's author, they would pay less attention to it. In addition, they said that comments should also have a limited length.

6. DISCUSSION

Our main goal was engage students in a creative learning task. In order to get it, we followed a process of four steps. First, we collected teacher's opinion. We combined our ideas with teacher's opinion and developed a new educational and social platform to support video based learning. Then we tested platform with an activity done by students. Last we collected student's opinion to corroborate or to throw away some characteristics or tools.

Teachers provided us with useful information to design the platform. They thought that videos visibility should be restricted to classmates or to school. Create a video should be a collaborative task and the platform should have a tool to modify the video. Also, the platform should allow to answer questions related to the video. Teachers thought that the video is a good teaching tool (agree with [14]) but it needs additional support to turn it in an effective teaching method. All teachers agree in saying that an educational platform based on a social network approach that supports creative learning activities, especially video-making, is useful.

Once the platform was developed, we tested it with twenty eight pre-graduate students. They must create a video about inheritance (an object-oriented programming concept), using workspaces of our platform and encouraging collaborative work [6]. Once created the videos, they should rate

and discuss them with their peers. The students were actively involved in the exploratory learning process working together [10].

One of the most important risks of using the social approach in educational environments are the non-academic messages [15], [19]. But none of the discussions held during the evaluation had suffered that situation. In fact, the best graded functionality of the platform was the group-private forums.

Taking into account the whole activity, students see it as an entertaining and useful activity. They also identify it as an alternative/complementary teaching method. In addition they have realized that making the video requires from them a reflection effort that helps them to learn the concepts. Finally, students would recommend its use in other subjects, most of them (66.67%) related to programming.

Students also have a positive opinion regarding the collaborative approach of the tasks performed with the platform. Commenting facilities were well rated, as well as the private workspaces for groups (as mentioned before).

Focusing on other social facilities, some of them like wallnotes, chats or “like” buttons were poorly rated by students. They realized that these tools do not contribute significantly to the platform. On the contrary, other typical features like bookmarks, tags or calendars received good ratings from students.

7. CONCLUSIONS

Nowadays, video-based learning is widely used approach for teaching. This contribution investigates its synergy with CSCL supported by a social approach. Our aim was to engage students in creative learning tasks, consisting of collaborative creation of educational videos. Thus, we developed a platform that could support these tasks.

Based on teachers' and students' feedback we can conclude that they will be easily involved in these kind of learning activities. Both agree that: i) significant learning is achieved during the whole video creation process because it allows students to understand better the concept that they have to explain with the video, and ii) the discussion process, sharing both, ideas and their peers' suggestions, are really important because they help to improve the video. Regarding the tools provided by the platform, teachers and students agree that the most useful features are the private group discussion forum, commenting their partners' videos and rating them. Additionally, we have found some unexpected students' opinions such as they usually select the "Like" button in other social networks (e.g. Facebook) but they prefer other tools in educational contexts (e.g. five star scale).

This learning experience has been well rated by students. They have suggested the application of this methodology to other STEM subjects (pre-university studies and degrees). Their general opinion is that the film-making process increases their engagement and watching videos created by peers promotes their curiosity and helps them to understand the TCs.

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